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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,444	09/29/2003	Kenji Araki	117361	6688
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			ART UNIT 1753	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/671,444		ARAKI ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Thanh-Truc Trinh		1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 6-7, 13-14, 18-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6-7, 13-14 and 18-19 all depend on claim 3 and recite limitation "sealing layer which is formed of a transparent resin and which covers said light-receiving surface" and "transparent glass plate which covers the light receiving surface of said sealing layer." However as amended, claim 3 recites limitation "upper surface thereof receiving light is exposed." The limitations are conflicting therefore render the dependent claims indefinite.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 3-5, 8, 16-17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Haynos (US Patent 3459391).

Regarding claim 3, as seen in Figure 1-3, Haynos discloses a photovoltaic electric generator comprising an array of a plurality of solar cell assemblies (11) each including a solar cell (12), and electrically conductive members (16) in the form of metallic foils connected to the solar cell; a heat dissipating layer (23) formed of a synthetic resin containing a thermally conductive filler; and a base plate (22) to which each of the solar cell assemblies is fixed through the heat dissipating layer, wherein the solar cell of the solar cell assembly is embedded in the heat dissipating layer such that side surfaces thereof are covered by the heat dissipating layer, a lower surface thereof is located below a surface of the heat dissipating layer, and an upper surface thereof receiving light is exposed. (See Figure 3, and col. 2 line 60 to col. 3 line 73).

Regarding claim 4, Haynos describes the heat dissipating layer is formed of room temperature vulcanizing silicon rubber (See col. 3 lines 47-52), which is a thermoset material, a non-thermoplastic having coefficient of viscosity of which is lowered to a minimal value during a rise of a temperature within a predetermined range in a process of heating the material to cure the non-thermoplastic material.

Regarding claim 5, Haynos describes the solar cell has a light-receiving surface, and said electrically conductive members (16) in the form of metallic foils extend outwardly from a periphery of said solar cell in a plane parallel to said light receiving surface. (See Figure 3).

Regarding claim 8, Haynos describes the solar cell has a light receiving surface and at least one electrode (18) formed on the light-receiving surface, and the electrically conductive members (16) in the form of metallic foils include at least one foil which is

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soldered (See col. 3 lines 27-45) to the electrode such that the foil is inclined at a predetermined angle with respect to an upper surface. (See Figure 3)

Regarding claim 16, as seen in Figures 1-3, Haynos discloses the metallic foils (16) have a plurality of voids and are at least partially embedded in the heat dissipating layer (23) such that the plurality of voids inherently are filled with a material of the heat dissipating layer.

Regarding claim 17, Haynos describes the solar cell has a light receiving surface, and the conductive members (16) in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface.

Regarding claim 20, Haynos describes the solar cell has a light receiving surface and at least one electrode (18) formed on the light receiving surface, and the electrical conductive members (16) in the form of metallic foils include at least one foil which is soldered (21 – See col. 3 lines 27-45) to at least one electrode such that at least one foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figure 3).

3. Claims 3-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Tourneux (US Patent 4210462).

Regarding claims 3 and 6-7, as seen in Figures 1-4, Tourneux discloses a photovoltaic electric generator of concentrator type comprising an array of a plurality of solar cell assemblies each including a solar cell (11), and electrically conductive members (12, 13) in the form of metallic foils (col. 6 lines 16-19); a heat dissipating

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layer (comprising inset plate 16 and bottom adhesive 19) formed of a synthetic resin containing a thermally conductive filler (See col. 2 lines 34-39); and a base plate (plates 14 or 15) to which each of solar cell assemblies is fixed through the heat dissipating layer and wherein the solar of each solar cell assembly is embedded in the heat dissipating layer so that the lower surface of the solar cell is located below the surface of the heat dissipating layer; a sealing layer of transparent resin (top adhesive 19 - col. 4 lines 11-12 and col. 2 lines 66-68) covers the light receiving surface; a glass plate (14 - col. 3 lines 54-55) cover the light receiving surface of the sealing layer. The solar cell (11) is embedded in the heat dissipating layer (inset plate 16 and bottom adhesive 19) such that side surfaces of the solar cell are covered by the heat dissipating layer, and the lower surface of the solar cell is located below a top surface of the heat dissipating layer (16). As seen in Figure 4, the upper light-receiving surface of the solar cells 45 are exposed before being laminated with adhesive 51 and inset plate 50. Tourneux teaches all the limitations of instant claims, therefore the reference is deemed to be anticipatory.

Regarding claim 4, Tourneux describes the heat dissipating layer is formed of a material selected from a group consisting of a thermoplastic material; and a non-thermoplastic material with a modulus of elasticity or coefficient of viscosity of which is lowered to a minimal value during a rise of a temperature of the non-thermoplastic material within a predetermined range in the process of heating the material to cure the non-thermoplastic material. (See col. 2 lines 58-68)

Regarding claim 5, Tourneux discloses a photovoltaic electric generator of concentrator type, wherein the solar cell has a light-receiving surface, and said

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electrically conductive members (12 and 13) in the form of metallic foils (See col. 6 lines 16-19) extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface.

Regarding claim 8, Tourneux discloses a photovoltaic electric generator of concentrator type, wherein the solar cell has a light receiving surface and at least one electrode formed on the light receiving surface, and the electrically conductive members in the form of metallic foils include at least one foil which is soldered to the electrode such that the foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figures 1-4 and col. 6 lines 16-19).

Regarding claim 9, Tourneux discloses a photovoltaic electric generator of concentrator type having a heat dissipating layer consists of a first layer (inset plates 16) which is remote from the base plate and a second layer (adhesive 19) located on one of opposite sides of the first layer. The second layer is formed of a material selected from a group consisting of a thermoplastic material (See Figures 1-4 and See col. 2 lines 58-68 and col. 3 lines 1-4).

Regarding claim 10, Tourneux describes the first layer (the inset plate) and the second layer (adhesive layer) are formed of epoxy resin. (See col. 2 lines 58-68 and col. 3 lines 1-4). The epoxy resin is thermosetting. (See additional reference in supporting this property of epoxy resin, Fujisaki et al. US Patent 5942048, col. 10 lines 22-23). Therefore, Tourneux does teach the limitation of the instant claim, and the reference is deemed to be anticipatory.

Regarding claim 11, Tourneux describes the first layer (inset plate) of the heat dissipating layer is formed of epoxy resin. A plate is inherently made of solid material. Therefore the first layer of the heat dissipating layer is formed of solid epoxy resin. Tourneux also describes the second layer (adhesive layer) is formed of epoxy resin. (See col. 2 lines 58-68 and col. 3 lines 1-4), and in liquid form. (See col. 6 lines 26-27).

Regarding claim 12, Tourneux discloses a photovoltaic electric generator of concentrator type as described in claim 9, wherein the solar cell has a light-receiving surface, and the electrical conductive members (13) in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface. (See Figures 1-4)

Regarding claim 13, Tourneux discloses a photovoltaic electric generator of concentrator type as described in claim 9, wherein the solar cell has a light-receiving surface, and each of the plurality of solar cell assemblies further includes a sealing layer (top layer of adhesive 19) which is formed of a transparent resin (See col. 4 lines 11-12 and col. 2 lines 66-68) and which covers the light receiving surface. (See Figures 1-4).

Regarding claim 14, Tourneux discloses a photovoltaic electric generator of concentrator type as described in claim 13, wherein the sealing layer has a light-receiving surface, and each of the plurality of solar assemblies further includes a transparent glass plate (glass plate 14; See Figures 1-4 and col. 3 lines 54-55) which cover the light receiving surface of the sealing layer.

Regarding claim 15, Tourneux discloses a photovoltaic electric generator of concentrator type as described in claim 9, wherein the solar cell has a light receiving



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surface and at least one electrode formed on the light-receiving surface, and the electrically conductive members (13) in the form of metallic foils include at least one foil which is soldered to the electrode such that the foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figures 1-4 and col. 6 lines 17-18).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 6-7 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haynos in view of Tourneux (US Patent 4210462).

Haynos discloses photovoltaic electric generator as described in claim 3.

With respect to claim 12, Haynos teaches the solar cell has a light-receiving surface and the electrically conductive members (16) in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface. (See Figure 3).

With respect to claim 15, Haynos also teaches the solar cell has a light receiving surface and at least one electrode (18) formed on the light receiving surface, the electrically conductive members (16) in the form of metallic foils include at least one foil which is soldered (by layer 21) to the electrode such that the one foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figure 3 and col. 3 lines 27-45 of Haynos).

Haynos does not specifically teach a heat dissipating layer consists of two layers, wherein the first layer is formed of a solid epoxy resin and the second layer is formed of a liquid epoxy resin; a sealing layer covers the light-receiving surface of the solar cell; a glass plate covers the sealing layer.

With respect to claims 9-11, as seen in Figures 1-4, Tourneux teaches a photovoltaic generator panel having a heat dissipating layer, wherein the heat dissipating layer consists of two layers (inset plate 16 and adhesive 19) of epoxy, or thermosetting resin. The first layer (the inset plate 16) is a solid epoxy, and the second layer (adhesive 19) is formed of liquid epoxy resin. (See col. 2 lines 55 to col. 6 line 57).

With respect to claims 6, 13 and 18, Tourneux teaches the solar cell includes a sealing layer of transparent resin (adhesive 19) covering the light receiving surface. (See Figures 1-4 and col. 2 line 66 to col. 4 line 30)

With respect to claims 7, 14 and 19, Tourneux also teaches the solar cell further includes a transparent glass plate (14) covering the light receiving surface of the sealing layer. (See '463 Figures 1-4, and col. 31-37)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the electric generator of Haynos by providing two layers of heat dissipating, sealing layer of transparent resin and a glass plate covering the light receiving surface of the sealing layer as taught by Tourneux, because it would provide a photovoltaic generator with improved encapsulation, increased stability. (See '462 col. 2 lines 48-58)

5. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tourneux in view of Haynos (US Patent 345391).

Tourneux discloses a photovoltaic electric generator of concentrator as described in claim 3.

With respect to claim 17, Tourneux describes the solar cell has a light receiving surface, and the electrically conductive members (13) in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface. (See Figures 1-4).

With respect to claim 18, Tourneux discloses the solar cell has a light-receiving surface, and each of the plurality of solar cell assemblies further includes a sealing layer (top adhesive 19) which is formed of a transparent resin and which cover the light-receiving surface. (See Figures 1-4 and col. 4 lines 11-15)

With respect to claim 19, Tourneux discloses the sealing layer has a light receiving surface, and each of the plurality of solar cell assemblies further includes a transparent glass plate (glass plate 14, See col. 3 lines 54-55) which covers the light-receiving surface of the sealing layer. (Sees Figures 1-4)

With respect to claim 20, Tourneux discloses the solar cell has a light receiving surface and at least one electrode formed on the light receiving surface, and the electrically conductive members (13) in the form of metallic foils include at least one foil which is soldered to the electrode such that the foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figures 1-4 and col. 6 lines 16-19)

Tourneux does not teach using metallic foils having a plurality of voids.

With respect to claim 16, Haynos teaches using metallic foils having a plurality of voids. (See '391 Figures 1-2 and col. 2 lines 66-72 and col. 3 lines 1-6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of Tourneux by using metallic foils having a plurality of voids as taught by Haynos, because it would permit the photovoltaic electric generator withstanding thermal and vibrational shock better, and thereby increasing its reliability. (See '391 col. 1 lines 68-72).

6. Claims 3-6, 8-10, 12-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill (US Patent 5498297).

Regarding claims 3 and 6, as seen in Figures 1-4, O' Neil et al. disclose a photovoltaic electric generator of concentrator type comprising an array of a plurality of solar cell assemblies (6) each including a solar cell (13), and electrically conductive members (copper ribbons 15, 16) in the form of metallic foils (See col. 4 line 5); a heat dissipating layer (42, 39, 41) formed of a synthetic resin containing a thermally conductive filler (See col. 4 lines 32-40 and col. 6 lines 1-4); and a base plate (heat sink 10) to which each of solar cell assemblies is fixed through the heat dissipating layer and wherein the solar of each solar cell assembly is embedded in the heat dissipating layer (42, 39, 41). O'Neill et al. also describe the light receiving surface of the solar cell is covered with a sealing layer (37) of transparent resin. (See col. 4 lines 32-40). O'Neill et al. do not specifically teach the solar is embedded in the heat dissipating layer such that side surface is located below a surface of the heat dissipating layer. However, O'Neill et al. described the solar cell is encapsulated between the heat dissipating layer (pressure sensitive adhesives 41, 42 and transparent Tefzel dielectric film 39) and dielectric 37, wherein the pressure sensitive layers define an adhesive border around the solar cell assembly. (See Figure 4, col. 2 lines 42-53). Thus, it would have been obvious to one skilled in the art that part of the assembly 6 or solar cell package 6 of O'Neil will be "embedded" within the lower pressure sensitive layer 42 because of the pressure exerted from the upper cell package 6. It is the Examiner's position that any minute indentation within the pressure sensitive layer would provide "side surfaces of the cell assembly thereof are covered by the heat dissipating layer" as claimed.

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With respect to claim 4, O' Neil et al. describe the heat dissipating layer is formed of a material of a thermoplastic material, Tefzel pressure sensitive adhesive. (See col. 6 lines 1-4).

With respect to claim 5, O' Neil et al. describe the solar cell has a light-receiving surface, and said electrically conductive members (copper ribbons 15, 16) in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface. (See Figures 2, 4).

With respect to claim 8, as seen in Figures 1-4, O'Neill et al. describe the solar cell has a light-receiving surface and at least one electrode (grid lines on the surface of solar cell 13 in Figure 2) formed on the light-receiving surface, and the electrical conductive members (copper ribbons 15 and 16) in the form of metallic foil include at least one foil which is soldered to the electrode such that the foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See col. 4 lines 1-11)

With respect to claims 9-10, O' Neil et al. disclose a photovoltaic electric generator of concentrator type having a heat dissipating layer consists of a first layer and a second layer located on one of opposite sides of the first layer which is remote from the base plate (See col. 4 lines 32-40 and col. 6 lines 1-4. The second layer is formed of a material of a thermoplastic material, Tefzel pressure sensitive adhesive. The first layer is also formed of Tefzel pressure sensitive adhesive which is a thermosetting material. (See Figures 1-2, 4)

With respect to claim 12, O'Neill et al. describe the solar cell has a light-receiving surface, and the electrically conductive members (15, 16) is in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface. (See Figures 1, 2 and 4, col. 4 lines 1-11).

With respect to claim 13, O'Neill et al. describe the solar cell has a light receiving surface, and each of the solar cell assemblies further includes a sealing layer (dielectric film 37) which is formed of a transparent resin and covers the light receiving surface. (See Figure 4 and col. 4 lines 32-67)

With respect to claim 15, O'Neill et al. describe the solar cell has a light receiving surface and at least one electrode formed on the light-receiving surface, and the electrically conductive members (15, 16) in the form of metallic foils include at least one foil which is soldered to said electrode such that the foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figures 1 and 4, col. 4 lines 1-67).

7. Claims 7, 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al. in view of Tourneux (US Patent 4210462).

O'Neill et al. disclose a photovoltaic electric generator of concentrator as described in claims 3, 9 and 13.

O'Neill et al. do not teach the transparent glass plate covers the light-receiving surface of the sealing layer; first and second layers of a heat dissipating layer are a solid epoxy and a liquid epoxy, respectively.

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With respect to claims 7 and 14, Tourneux teaches using a transparent glass plate (14) to cover the light receiving surface of the sealing layer (top adhesive 19). (See '462 Figures 1-4, col. 3 line 48 to col. 4 line 58)

With respect to claim 11, Tourneux teaches using a heat dissipating layer have a solid epoxy layer (inset plate 16) and a liquid epoxy layer (bottom adhesive layer 19). (See '462 Figures 1-4, col. 2 lines 58 to col. 3 line 4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of O'Neill by using a transparent glass plate to cover the sealing layer and a heat dissipating layer having solid and liquid epoxy layers as taught by Tourneux, because it would provide a device with increased stability, improved encapsulation. (See '462 col. 2 lines 48-58).

8. Claims 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill in view of Haynos (US Patent 345391).

O'Neill discloses a photovoltaic receiver as described in claim 9.

With respect to claim 17, O'Neill et al. describe the solar cell has a light-receiving surface, and the electrically conductive members (15, 16) is in the form of metallic foils extend outwardly from a periphery of the solar cell in a plane parallel to the light receiving surface. (See Figures 1, 2 and 4, col. 4 lines 1-11).

With respect to claim 18, O'Neill et al. describe the solar cell has a light receiving surface, and each of the solar cell assemblies further includes a sealing layer (dielectric



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film 37) which is formed of a transparent resin and covers the light receiving surface.

(See Figure 4 and col. 4 lines 32-67)

With respect to claim 20, O'Neill et al. describe the solar cell has a light-receiving surface and at least one electrode formed on the light receiving surface (grid lines on top of solar cell 13 in Figure 2), and the electrically conductive members (15, 16) is in the form of metallic foils soldered to the electrode such that at least one foil is inclined at a predetermined angle with respect to an upper surface of the electrode. (See Figures 1, 2 and 4, col. 4 lines 1-11).

O'Neill et al. do not teach using metallic foils having a plurality of voids.

With respect to claim 16, Haynos teaches using metallic foils having a plurality of voids. (See Figures 1-2 and col. 2 lines 66-72 and col. 3 lines 1-6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the module of O'Neill et al. by using metallic foils having a plurality of voids as taught by Haynos, because it would permit the photovoltaic electric generator withstanding thermal and vibrational shock better, and thereby increasing its reliability. (See col. 1 lines 68-72).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill in view of Haynos (US Patent 345391) and further in view of Tourneux (US Patent 4210462).

O'Neill et al. and Haynos teach a photovoltaic electric generator as described in claim 18.

Neither O'Neill et al. nor Haynos teach using a glass plate covering the sealing layer.

To urneux teaches using glass plate (14) to cover the sealing layer (top adhesive layer 19). (See '462 Figures 1-4, col. 3 line 48 to col. 4 line 58)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of O'Neill et al. and Haynos by using a transparent glass plate to cover the sealing layer and a heat dissipating layer having solid and liquid epoxy layers as taught by Tourneux, because it would provide a device with increased stability, improved encapsulation. (See '462 col. 2 lines 48-58).

### ***Response to Arguments***

Applicant's arguments filed 6/29/07 have been fully considered but they are not persuasive.

Applicant argues that neither Torneux, Haynos nor O'Neill provide an upper surface that is exposed. The Examiner respectfully disagrees. Haynos teaches the solar cell having upper surface exposed as seen in Figure 3. In addition, Applicant claims a photovoltaic electric generator of concentrator type having an upper light-receiving surface exposed in claim 3, but this light-receiving surface is covered with a sealing layer of transparent resin and a glass plate in claims 6-7, 13-14, 18-19. Therefore, the references to both Torneux and O'Neill meet this requirement.

### ***Conclusion***

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**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT

09/14/07



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SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700